Manitoba
Building for the Future

FARM BUSINESS MANAGEMENT

Guidelines For Estimating
White Pea (Navy) Bean Production Costs

Manitoba Agriculture and Food - Information Update **www.gov.mb.ca/agriculture/**

Date: January, 2003

This guide is designed to provide you with planning information and a format for calculating the cost of production for a white pea (navy) bean enterprise for both row crop and solid seeded production. Also available, on the Manitoba Agriculture and Food website, is an Excel spreadsheet and it can be downloaded from the following address: **www.gov.mb.ca/agriculture**.

The cash cost inputs associated with growing a crop in Manitoba are substantial. It is extremely important for farm managers to do detailed calculations to select the optimum crop combination that will maximize profits. Detailed planning is also necessary when estimating the amount of operating credit required to finance the inputs.

Producers are encouraged to calculate their own costs of production. Costs and yields differ on each farm due to soil type, climatic conditions and agronomic practices.

Disclaimer: This budget is only a guide and is not intended as an in depth study of the cost of production of this industry. Interpretation and utilization of this information is the responsibility of the user. If you require assistance with developing your individual budget, please contact your local Manitoba Agriculture and Food office.

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Industry Summary

Edible beans is a general term used to describe several bean market classes that include white pea (navy), pinto, black, light red kidney, dark red kidney,cranberry and great northern beans. Edible bean production in Manitoba has grown from 60,000 acres in 1996 and peaking at 310,000 acres in 2002. White pea (navy) beans are the most common type accounting for over 60% of the total acres.

Traditionally white pea (navy) beans are grown as a **row crop** in 36 or 30 inch rows. Under this system weeds are managed through a combination of cultivation and herbicides. Harvest system consists of cutting the bean stems below the ground with a knife, putting them in a swath to dry and windrowing the swaths before combining.

New growers are looking at growing beans in row widths from 8 to 21 inches using their existing air seeders. This practice is often referred to as **solid seeded** or narrow row production and accounts for approximately 20% of the edible acreage in Manitoba. Solid seeded bean production relies on herbicides for weed control and requires upright varieties that lend themselves to direct combining or swathing.

White Pea (Navy) Bean - Cost of Production Summary January, 2003

	Row Crop		Solid Seed		
A. Operating Costs	**$/acre**	**$/lb**	**$/acre**	**$/lb**	**Your Cost**
1.01 Seed	$38.16	$0.0224	$53.28	$0.0355	
1.02 Fertilizer	$32.00	$0.0188	$32.00	$0.0213	
1.03 Chemicals	$74.50	$0.0438	$94.00	$0.0627	
1.04 Insecticide/Fungicide	$30.00	$0.0176	$30.00	$0.0200	
1.05 Fuel Costs	$13.81	$0.0081	$10.38	$0.0069	
1.06 Repair & Maintenance	$11.00	$0.0065	$9.40	$0.0063	
1.07 Insurance	$9.80	$0.0058	$8.75	$0.0058	
1.08 Miscellaneous	$8.00	$0.0047	$8.00	$0.0053	
1.09 Land Taxes	$8.00	$0.0047	$6.50	$0.0043	
Subtotal Operating	$225.27	$0.1325	$252.31	$0.1682	
1.10 Interest on Operating	$6.76	$0.0040	$7.57	$0.0050	
Total Operating Costs	**$232.03**	**$0.1365**	**$259.88**	**$0.1732**	
B. Fixed Costs					
2. Depreciation					
2.01 Machinery	$27.50	$0.0162	$23.50	$0.0157	
2.02 Storage	$1.90	$0.0011	$1.90	$0.0013	
3. Investment					
3.01 Land	$32.00	$0.0188	$26.00	$0.0173	
3.02 Machinery	$11.00	$0.0065	$9.40	$0.0063	
3.03 Storage	$0.84	$0.0005	$0.84	$0.0006	
Total Fixed Costs	**$73.24**	**$0.0431**	**$61.64**	**$0.0411**	
C. Labour	**$18.00**	**$0.0106**	**$15.00**	**$0.0100**	
Total Cost of Production	**$323.27**	**$0.1902**	**$336.52**	**$0.2243**	
Estimated Yield per acre	**1,700 lbs**		**1,500 lbs**		

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Manitoba Agriculture and Food
Farm Management

White Pea (Navy) Bean Cost of Production Worksheet
Row Crop Assumptions

1. This budget provides a guideline to determine the cost of production for a row crop white pea (navy) bean enterprise, based on 400 acres.

2. The investment in machinery and equipment was assumed to be $275 per acre. The machinery complement is similar to a grain enterprise with the addition of a row crop planter, row crop cultivator, row crop sprayer and a bean wihdrower.

3. A yield of 1700 lbs per acre was assumed.

4. A land value of $800 per acre was assumed.

A. Operating Costs				**Your Cost**
1.01 Seed				
		100,000	plants/acre	
	÷	2200	seeds/lb	
	x	1.17	emergence factor	
	=	53	seeding rate lbs/acre	
	x	$0.72	seed cost ($/lb)	
	=	**$38.16**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		60	lbs/acre	
	x	$0.280	cost/lb	
	=	$16.80	$ /acre	
P_2O_5		30	lbs/acre	
	x	$0.300	cost/lb	
	=	$9.00	$ /acre	
K_2O		20	lbs/acre	
	x	$0.145	cost/lb	
	=	$2.90	$ /acre	

Sulfur		10	lbs/acre	
	x	$0.330	cost/lb	
	=	$3.30	$ /acre	
Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**32.00**	**$ /acre**	

1.03 Chemicals

	$20.00	pre plant incorporated	
+	$13.00	post emergent	
+	$27.00	post emergent	
+	$14.50	desiccant	
=	**$74.50**	**$ /acre**	

1.04 Insecticide/Fungicide

	1	number of applications	
x	$5.00	cost/application	
+	$25.00	fungicide	
=	**$30.00**	**$ /acre**	

1.05 Fuel Costs

a) Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Cultivate	1	48	5	0.77	
Spray	1	90	7	0.29	
Cultivate	2	48	5	1.54	
Plant	1	24	6	1.28	
Cultivate	2	24	6	2.56	
Spray	2	90	7	0.59	
Puller	1	12	7	2.19	
Combine	1	24	3.5	2.19	
Total				**$11.41**	

b) Truck Fuel Costs from field to storage

	1700	lbs/acre gross yield
=	340	total tons
÷	5	tons (truck capacity)
=	68	trips
x	5	miles per trip
=	340	total miles
÷	2.0	fuel consumption (miles/gal)
=	773	total litres (4.546 litres/gal)
÷	400	total acres
=	1.93	litres/acre
x	$0.52	fuel cost ($/litre)
Total =	**$1.00**	**trucking ($ /acre)**

c) Other fuel costs =	**$1.40**	**$ /acre**
Total fuel costs =	**$13.81**	**$ /acre**

1.06 Repair & Maintenance

	4.0%	percentage rate
x	$275	investment/acre
=	**$11.00**	**$ /acre**

1.07 Insurance

	$7.00	crop insurance
+	$2.80	hail insurance
=	**$9.80**	**$ /acre**

1.08 Miscellaneous

=	**$8.00**	**$ /acre**

1.09 Land Taxes

=	**$8.00**	**$ /acre**

1.10 Interest on Operating

	$225.27	Subtotal Operating
÷	2	average
x	6.0%	interest rate
=	**$6.76**	**$ /acre**

B. Fixed Costs

2. Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

2.01 Machinery

	$275.00	cost/acre	_____
-	$0.00	salvage value	_____
÷	10	useful life	_____
=	**$27.50**	**$ /acre**	_____

2.02 Storage

	$40.00	cost/acre	_____
-	$2.00	salvage value	_____
÷	20	useful life	_____
=	**$1.90**	**$ /acre**	_____

3. Investment

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

3.01 Land

	$800.00	cost/acre	_____
x	4.0%	% investment rate	_____
=	**$32.00**	**$ /acre**	_____

3.02 Machinery

	$275.00	cost/acre	_____
+	$0.00	salvage value	_____
x	4.0%	% investment rate	_____
=	**$11.00**	**$ /acre**	_____

3.03 Storage

	$40.00	cost/acre	_____
+	$2.00	salvage value	_____
÷	2	average	_____
x	4.0%	% investment rate	_____
=	**$0.84**	**$ /acre**	_____

C. Labour

	$10.00	$/hour	_____
x	1.8	hours/acre	_____
=	**$18.00**	**$ /acre**	_____

White Pea (Navy) Bean Cost of Production Worksheet
Solid Seed Assumptions

1. This budget provides a guideline to determine the cost of production for a solid seeded white pea (navy) bean enterprise, based on 400 acres.

2. The investment in machinery and equipment was assumed to be $235 per acre. The machinery complement is similar to a grain enterprise with the addition of a flex header.

3. A yield of 1500 lbs per acre was assumed. This is slightly lower than the yield for row crop production to reflrct the fact that much of the acreage lies outside the traditional bean production area.

4. A land value of $650 per acre was assumed.

A. Operating Costs				**Your Cost**
1.01 Seed				
		140,000	plants/acre	
	÷	2200	seeds/lb	
	x	1.17	emergence factor	
	=	74	seeding rate lbs/acre	
	x	$0.72	seed cost ($/lb)	
	=	**$53.28**	**$ /acre**	
1.02 Fertilizer				
Nitrogen		60	lbs/acre	
	x	$0.280	cost/lb	
	=	$16.80	$ /acre	
P_2O_5		30	lbs/acre	
	x	$0.300	cost/lb	
	=	$9.00	$ /acre	
K_2O		20	lbs/acre	
	x	$0.145	cost/lb	
	=	$2.90	$ /acre	

Sulfur		10	lbs/acre	
	x	$0.330	cost/lb	
	=	$3.30	$ /acre	
Zinc		0	lbs/acre	
	x	$1.50	cost/lb	
	=	$0.00	$ /acre	
Total	**=**	**$32.00**	**$ /acre**	

1.03 Chemicals

	$20.00	pre plant incorporated	
+	$17.00	post emergent	
+	$42.50	post emergent	
+	$14.50	desiccant	
=	**$94.00**	**$ /acre**	

1.04 Insecticide/Fungicide

	1	number of applications	
x	$5.00	cost/application	
+	$25.00	fungicide	
=	**$30.00**	**$ /acre**	

1.05 Fuel Costs

a) Field Fuel Costs

Operation	Times Over	Width feet	Speed mph	Fuel $/ac.	
Cultivate	1	48	5	0.77	
Spray	1	90	7	0.29	
Cultivate	2	48	5	1.54	
Plant	1	24	6	1.28	
Spray	2	90	7	0.59	
Swath	1	24	4.5	1.71	
Combine	1	24	4	1.92	
Total				**$8.09**	

b) Truck Fuel Costs from field to storage

	1,500	lbs/acre gross yield	
=	300	total tons	
÷	5	tons (truck capacity)	
=	60	trips	
x	5	miles per trip	
=	300	total miles	
÷	2.0	fuel consumption (miles/gal)	
=	681.9	total litres (4.546 litres/gal)	
÷	400	total acres	
=	1.70	litres/acre	
x	$0.52	fuel cost ($/litre)	
Total =	**$0.89**	**trucking ($ /acre)**	

c) Other fuel costs = $1.40 $ /acre

Total = $10.38 fuel costs ($ /acre)

1.06 Repair & Maintenance

	4.0%	percentage rate	
x	$235	investment/acre	
=	**$9.40**	**$ /acre**	

1.07 Insurance

	$7.00	crop insurance	
+	$2.80	hail insurance	
=	**$9.80**	**$ /acre**	

1.08 Miscellaneous

= $8.00 $ /acre

1.09 Land Taxes

= $6.50 $ /acre

1.10 Interest on Operating

	$252.31	Subtotal Operating	
÷	2	average	
x	6.0%	interest rate	
=	**$7.57**	**$ /acre**	

B. Fixed Costs

2. Depreciation

$$\frac{\text{Original Value - Salvage Value}}{\text{Useful Life}}$$

2.01 Machinery

	$235.00	cost/acre	
-	$0.00	salvage value	
÷	10	useful life	
=	**$23.50**	**$ /acre**	

2.02 Storage

	$40.00	cost/acre	
-	$2.00	salvage value	
÷	20	useful life	
=	**$1.90**	**$ /acre**	

3. Investment

$$\frac{\text{Original Value + Salvage Value}}{2} \times \text{Investment Rate}$$

3.01 Land

	$650.00	cost/acre	
x	4.0%	% investment rate	
=	**$26.00**	**$ /acre**	

3.02 Machinery

	$235.00	cost/acre	
+	$0.00	salvage value	
x	4.0%	% investment rate	
=	**$9.40**	**$ /acre**	

3.03 Storage

	$40.00	cost/acre	_____
+	$2.00	salvage value	_____
÷	2	average	_____
x	4.0%	% investment rate	_____
=	**$0.84**	**$ /acre**	_____

C. Labour

	$10.00	$/hour	_____
x	1.5	hours/acre	_____
=	**$15.00**	**$ /acre**	_____

For further information contact your Manitoba Agriculture and Food office.

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